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**SHOW ALL WORK! No graphing calculators or internet-capable devices**

1) (4pts) Convert  $-300^\circ$  to radians. Express your result in terms of  $\pi$  and reduce the fraction to lowest terms.

2) (4pts) Express  $\frac{5\pi}{12}$  in degree measure.

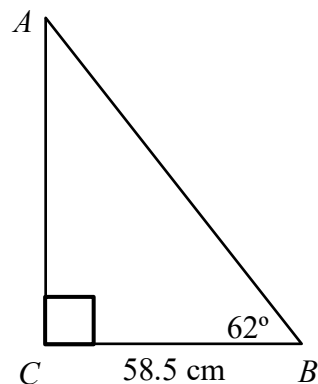
3) (4pts) Find the reference angle for  $197^\circ$ .

4) (4pts) Let  $\theta$  be an angle in standard position. Name the quadrant in which the terminal side of the angle  $\theta$  lies if  $\cot \theta < 0$  and  $\csc \theta < 0$ .

5) (4pts) Find a positive angle less than  $360^\circ$  that is coterminal with  $1230^\circ$ .

6) (5pts) Determine the exact value of  $\sin 225^\circ$ . (Decimal approximations will **NOT** be accepted.)

7) (10pts) In  $\triangle ABC$ ,  $\angle B = 62^\circ$  and  $BC = 58.5$  cm. Find the length of side  $AB$  to the nearest tenth of a centimeter. (Triangle is not drawn to scale.)



8) (10pts) The angle  $\theta$  is acute and  $\cos \theta = \frac{\sqrt{13}}{7}$ . Use a Pythagorean identity to find the exact value of  $\sin \theta$ . (Decimal approximations will NOT be accepted.)

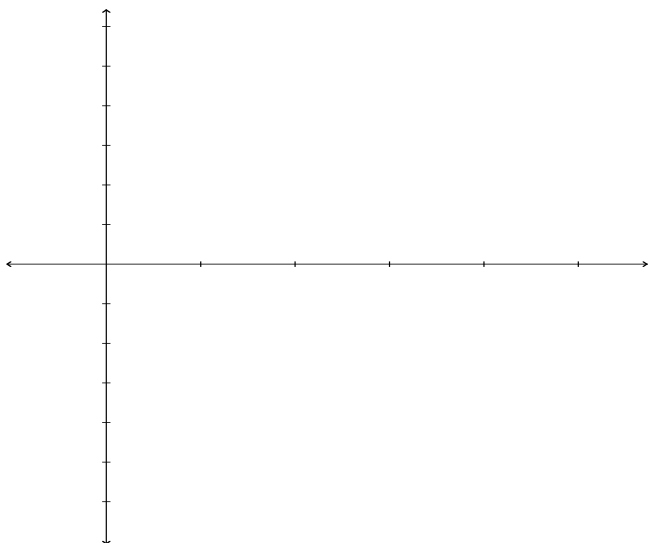
9) (10pts) The angle of elevation to the top of a building from a point on the ground is  $37^\circ$ . If the building is 230 meters tall, how far, to the nearest tenth of a meter, is the point on the ground from the base of the building?

10) (10pts) For  $y = 5 \sin\left(\frac{\pi}{2}x\right)$

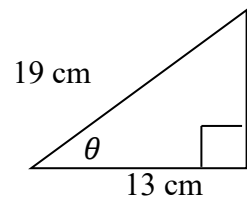
a) Find the amplitude.

b) Find the period.

c) Sketch the graph of one cycle of  $y = 5 \sin\left(\frac{\pi}{2}x\right)$  and label the scale on the  $x$ - and  $y$ -axes.



11) (5pts) In the triangle on the right, find the measure of  $\theta$  to the nearest tenth of a degree. (Triangle is not drawn to scale.)



12) (5pts) Find a cofunction with the same value as  $\sin 71^\circ$ .

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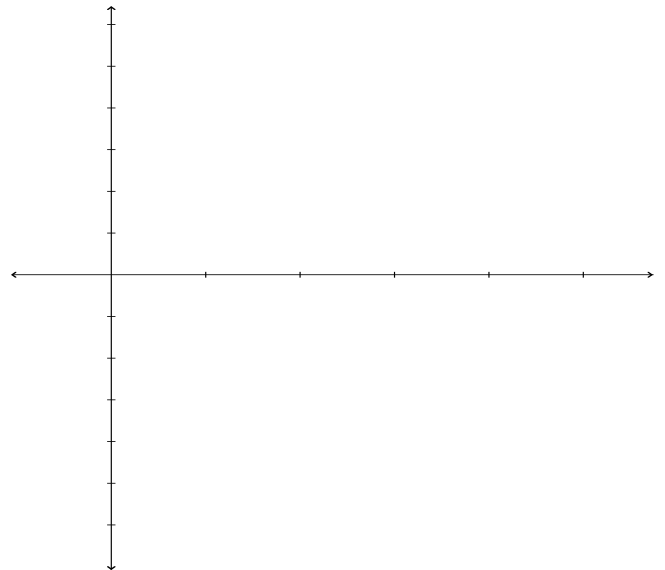
13) (10pts) If  $\tan \theta = \frac{-15}{8}$  and  $\theta$  is in quadrant IV, find the exact values of the other five trigonometric functions of  $\theta$ . (Decimal approximations will **NOT** be accepted.)

14) (10pts) For  $y = -3 \cos(5x)$

a) Find the amplitude.

b) Find the period.

c) Sketch the graph of one cycle of  $y = -3 \cos(5x)$  and label the scale on the  $x$ - and  $y$ -axes.



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15) (5pts) A point in quadrant IV is on the unit circle. If its  $x$ -coordinate is  $\frac{24}{25}$ , find the exact value of its  $y$ -coordinate. (Decimal approximations will **NOT** be accepted.)